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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/566,647

08/17/2006

Jens Richter

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EXAMINER

WALBERG, TERESA J

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

12/24/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/566,647	Applicant(s) RICHTER, JENS	
	Examiner Teresa J. Walberg	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-17,21,24,27,28,31 and 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-17,21,24,27,28,31 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 15, 16, 20, 21, 24, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al (5,222,551).

Hasegawa et al discloses a heat exchanger (Figs. 1-3) including several tray shaped plates (1), which are placed on top of one another (Fig. 1), sealed together on their peripheral edges (2) and provided with passages (11, 13), two continuous flow channels (6, 7) are each formed from the passages that lie essentially above one another (Figs. 1, 2A, 2B)), each flow channel traverses the plates (Fig. 1), the two flow channels being traversed by different media from a single admission side to a single discharge side (Fig. 1), each flow channel having essentially elongate cross sections (6, 7) at the admission and discharge sides, the cross section being oval (Fig. 1), the heat exchanger being a stacked plate cooler for a vehicle (col. 1, lines 6,7), each plate including passages with elongate cross section (Fig. 1).

Hasegawa et al shows the oval flow channels having proportions similar those of the present invention, however, patent drawings cannot be presumed to

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be to scale and Hasegawa et al does not state the measurements of the channels. Thus it is unclear whether the channels of Hasegawa et al have the claimed length to width ratio of between 1.5 and 3 and a length of between 15 and 30 mm.

However, it is known in the art to use flow channels with a variety of different sizes and proportions, ranging from round, which would have a length to width ratio of 1.0, to very long and narrow, which would have a length to width ratio of substantially greater than 3. One of ordinary skill in the art would select the proportions of the tube based on the desired smoothness of flow, which would be greater as the tube approaches a round cross section, the space into which the tube was to fit, narrow tubes fit into narrower cross sections but wider tubes carry more fluid for a given diameter, and the desired surface area of the tube, greater surface area increase contact area for heat transfer but results in a more turbulent flow. One of ordinary skill in the art would select the length of the flow channel based on the other measurements of the device and the desired proportions of the device as discussed above. Thus the length of the flow channel and the length to width proportions of the flow channels are considered to be result-effective variables, which one of ordinary skill in the art would optimize based on the specific flow conditions intended for the device. See MPEP 2144.05.

It would have been obvious to one of ordinary skill in the art to use flow channels having a length of 15 to 25 mm and a length to width ratio of between

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1.5 and 3 in the heat exchanger of Hasegawa et al, based on the intended use of the device and since Hasegawa et al leaves it to one of ordinary skill in the art to determine the actual measurements of the device.

3. Claims 17, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al (5,222,551) in view of Andersson (WO 01/67021).

Hasegawa et al discloses a heat exchanger having the claimed structure with the exception of passages having different cross sectional shapes.

Andersson discloses heat exchangers in which passages have different cross sectional shapes (see 11 and 22 in Fig. 1).

It would have been obvious to one of ordinary skill in the art in view of Andersson to use passages with different cross sectional shapes in the heat exchanger of Hasegawa et al, the motivation being to enable adjusting the sizes and shapes of the flow passages to the different liquids used in the heat exchanger.

4. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al (5,222,551) in view of Kohler et al (2003/0131981).

Hasegawa et al discloses a heat exchanger having the claimed structure with the exception of a connector element having an elongate cross section on one side and a round cross section on another side.

Kohler et al disclose a heat exchanger including a connector element (Fig. 3) having an elongate cross section on one side (50) and a round cross section on another side (46).

It would have been obvious to one of ordinary skill in the art in view of Kohler et al to use a connector with a elongate to round connector in the heat exchanger of Hasegawa et al, the motivation being to enable easily connecting round and oval flow channels.

5. Applicant's arguments filed 09 September 2009 have been fully considered but they are not persuasive.

Applicant argues that Hasegawa et al does not disclose the length to width ratio of the tubes being between 1.5 and e and the length being between 15 and 25 mm.

However, it is known in the art to use flow channels with a variety of different sizes and proportions, ranging from round, which would have a length to width ratio of 1.0, to very long and narrow, which would have a length to width ratio of substantially greater than 3. One of ordinary skill in the art would select the proportions of the tube based on the desired smoothness of flow, which would be greater as the tube approaches a round cross section, the space into which the tube was to fit, narrow tubes fit into narrower cross sections but wider tubes carry more fluid for a given diameter, and the desired surface area of the tube, greater surface area increase contact area for heat transfer but results in a

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more turbulent flow. One of ordinary skill in the art would select the length of the flow channel based on the other measurements of the device and the desired proportions of the device as discussed above. Thus the length of the flow channel and the length to width proportions of the flow channels are considered to be result-effective variables, which one of ordinary skill in the art would optimize based on the specific flow conditions intended for the device. See MPEP 2144.05.

It would have been obvious to one of ordinary skill in the art to use flow channels having a length of 15 to 25 mm and a length to width ratio of between 1.5 and 3 in the heat exchanger of Hasegawa et al, based on the intended use of the device and since Hasegawa et al leaves it to one of ordinary skill in the art to determine the actual measurements of the device.

The objection to claim 20 is withdrawn in view of the amendment to the claim.

6. THIS ACTION IS MADE NON-FINAL, since the prior action inadvertently referred to claim 25 rather than claim 24.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa J. Walberg whose telephone number is 571-272-4790. The examiner can normally be reached on M-F 8:00 - 4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Teresa J. Walberg/
Primary Examiner, Art Unit 3744

/TW/